# MANAGEMENT PLAN AND CONSERVATION STRATEGIES FOR GREATER SAGE-GROUSE IN NORTH DAKOTA

**PREPARED UNDER DIRECTION OF**
**NORTH DAKOTA GAME AND FISH DEPARTMENT**
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**Prepared By**

John J. McCarthy
P.O. Box 306
Augusta, MT 59410

Jerry D. Kobriger
225 30th Avenue Southwest
Dickinson, ND 58601

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## DOCUMENT PARTICIPANTS

The following individuals have been involved in developing the original document or review and revision of early drafts. All have provided important input which contributed to completion of the final plan.

Eric Aasmundstad, ND Farm Bureau
Casey Anderson, ND Game and Fish Department
Chuck Berdan, Bureau of Land Management
John and Nikki Brown, Little Missouri Grazing Association
Anne Marguerite Coyle, ND Chapter of The Wildlife Society
Eileen Day, Burlington Resources
Dave Dewald, Natural Resources Conservation Service
Larry Fischer, Little Missouri Grazing Association
Mark Franklund, Little Missouri Grazing Association
Lance Gaebe, Governor' Office, Ag Policy Advisor
Bill Goetz, Chief of Staff, Governor's Office
Sandy Hagen, ND Game and Fish Department
Nate Harling, ND Game and Fish Department
Robert Harms, Northern Alliance of Independent Producers
Lynn Helms, ND Industrial Commission
Loren Jacobson, Little Missouri Grazing Association
Kevin Kading, ND Game and Fish Department
Jerry D. Kobriger, ND Game and Fish Department
Stan Kohn, ND Game and Fish Department
Brian Kramer, ND Farm Bureau
Karen Kreil, US Fish and Wildlife Service
Randy Kreil, ND Game and Fish Department
John McCarthy, Western Association of Fish & Wildlife Agencies
John Mittleider, ND Farm Bureau
Jeff Printz, Natural Resources Conservation Service
Ron Ness, North Dakota Petroleum Council
John Lee Njos, Landowner, Bowman County
Doug Pope, Little Missouri Grazing Association
Don Rufledt, Bureau of Land Management
Andy Schollett, US Forest Service
John W. Schulz, ND Game and Fish Department
Mike Sondeland, Natural Resources Conservation Service
Dan Svingen, US Forest Service
Arden Warm, US Forest Service
Tim Zachmeier, Bureau of Land Management

## EXECUTIVE SUMMARY

Growing concern about the status of sagebrush (*Artemisia spp*.) on western rangelands and declines in sage-grouse (*Centrocercus urophasianus*) numbers led to petitioning the Fish and Wildlife Service of the U. S. Department of Interior to protect populations in some western states under provision of the federal Endangered Species Act (ESA). Loss of sagebrush-grasslands in some western states has approached or exceeded 50 percent. Such habitat loss in North Dakota may be a factor in the decline of sage-grouse in the state. In December, 2004, the USFWS ruled that the Greater sage-grouse does not warrant protection under the ESA.

A Memorandum of Understanding (MOU) for the conservation and management of sage-grouse was signed by member states of the Western Association of Fish and Wildlife Agencies (WAFWA) and federal natural resource management agencies. Members of these organizations have agreed to work cooperatively to develop conservation plans for sage-grouse in each of eleven western states.

### Purpose of the Plan

The mission of the North Dakota Game and Fish Department (NDGFD) is to protect, conserve and enhance fish and wildlife populations and their habitats for sustained public consumptive and appreciative use. The NDGFD operates under a series of legal mandates, comprised of legislation and legislative intent that dictates the Department's responsibilities and its authorities in carrying out these responsibilities. The *Management Plan and Conservation Strategies for Sage-grouse in North Dakota* was developed to fulfill the mission statement as it relates to sage-grouse in North Dakota.

### Distribution and Habitat Needs of Sage-grouse

Sage-grouse are native to the sagebrush steppe of western North America and their distribution closely follows that of sagebrush, primarily big sagebrush (*A. tridentata*). Distribution of sage-grouse in North Dakota is restricted to approximately 800 square miles in western Bowman County, western Slope County, and southern Golden Valley County.

Sage-grouse in North Dakota are largely non-migratory, although there may be some short seasonal movements between summer and winter habitats. The following seasonal habitats are important for survival of sage-grouse:

- *Breeding Habitat:* Strutting grounds or "leks" where breeding actually occurs, are key activity areas and most often consist of clearings surrounded by sagebrush cover. Literature reports that sagebrush canopy cover at feeding and loafing sites in the vicinity of leks is 20-50 percent with an average of 32 percent.

- *Nesting Habitat:* Sage-grouse invariably prefer sagebrush for nesting cover, and quality of nesting cover directly influences nest success. Successful nesting requires concealment provided by a combination of shrub and residual grass cover. Sage-grouse most frequently select nesting cover with a sagebrush canopy of 15-31 percent. Research findings suggest that about two-thirds of nests occur within two miles of a lek.

- *Brood-rearing Habitat:* Areas providing abundance and diversity of succulent forbs, an important summer food source for young sage-grouse, provide key brood-rearing habitat. Research indicates that sage-grouse broods prefer relatively open stands of sagebrush during

summer, generally with a canopy ranging from 1-25 percent. As palatability of forbs declines, sage-grouse move to moist areas that still support succulent vegetation, including alfalfa fields, roadside ditches, and other moist sites. During summers of high precipitation, sage-grouse may remain widely distributed throughout the entire summer due to the wide distribution of succulent forbs.

- *Winter Habitat:* Sage-grouse generally select relatively tall and large expanses of dense sagebrush during winter. Wintering areas include sagebrush stands on relatively flat sites with a 20 percent canopy and an average height of 10 inches. The importance of shrub height increases with snow depth. Snow depth can limit availability of wintering sites to sage-grouse.

**Population Dynamics**

From 1946 through 1951, sage-grouse population surveys consisted of observers walking through big sagebrush areas and noting numbers of sage-grouse flushed. This provided a crude index of sage-grouse population numbers on an annual basis. In 1951, birds were located and counted while they were on their strutting grounds in March and April. Two years later, in 1953, an aircraft was used to locate grounds and make spring counts. Most counts were then made by air until the 1960's when a gradual shift was made from air to ground counts. Today all counts are made from the ground while most surveys (searching for grounds) are made by air.

During early Dakota territorial and statehood years annual sage-grouse seasons were opened concurrently with sharp-tailed grouse and prairie chickens. The season on sage- grouse was closed in 1923 but was re-opened in 1964 and has been open every year since that time except for 1979. Season regulations (few days, one bird limit, mid-week season) limits hunter participation and harvest while allowing nearly everyone who so desires to hunt sage-grouse.

Wing data have been gathered annually since the season was re-opened in 1964. The small population and Department regulations to restrict harvest have resulted in a very limited sage-grouse wing collection. A post card survey collects data pertaining to days hunted, area hunted, and hunter success. Estimates over the last fourteen years indicate averages of 124 hunters per year and 47 sage-grouse harvested per year which is a hunter success rate of about 38 percent.

Juvenile mortality during the first few weeks after hatching is typically high and can increase when drought reduces availability of important food sources, such as insects and forbs, or herbaceous understory, used as hiding and escape cover. Survival rates for adult sage-grouse are generally considered to be high, and thus population declines are usually not related to high levels of predation on adult birds. Adult hens are most vulnerable to predation during the nesting period, whereas adult males are most vulnerable during the spring breeding season.

**Issues Requiring Conservation Actions**

During the conservation planning effort, eight risks to sage grouse and their habitat were identified. Twelve issues are listed with possible conservation actions to reduce those risks. The issues are:

- *Fire Management:* Benefits, detriments, and relative frequency of fire on sage-grouse habitats often are subjects of disagreement. Use of prescribed fire in the sagebrush community can result in a net loss of sagebrush and concerns those desiring to maintain a mature sagebrush community. Some land managers consider fire an effective tool to manage sagebrush stands

with dense sagebrush cover and suppressed herbaceous cover. Both prescribed and wild fires can have cumulative effects on sagebrush habitat and wildlife species that depend on it.

- *Grazing Management:* Many western rangelands were over-stocked with livestock in the late-1800s and early 1900s, thus altering the composition and productivity of some sagebrush and other vegetative communities. Effects of livestock on sage-grouse habitat, and on the birds, may be positive, negative, or neutral depending on the specific grazing prescription and on the ecological site. To minimize the potential impact of removing important understory vegetation, flexible grazing management programs need to be planned and implemented while considering needs of sage-grouse. Research is needed to identify and evaluate effects of various grazing management plans on the interaction of sage-grouse, commodity production, and other societal values.

- *Harvest Management:* Sage-grouse generally have a low average productivity rate, but also are one of the longest lived. Although some believe that hunting is detrimental, direct effects of hunting on sage-grouse are small when compared to other forms of mortality. A strategy of adaptive harvest management should be implemented to reduce uncertainty about effects of harvest on sage-grouse populations.

- *Noxious Weed Management:* Landowners/managers have a statutory responsibility to develop management plans for treatment of noxious weeds on land they own and/or manage. Noxious weeds displace more desirable native plant species and cause significant adverse biological and economic effects by reducing productivity of healthy rangeland. Chemical control of weeds is efficient although it poses some short-term toxicological risk to sage-grouse and other wildlife. Reduction of forbs important to sage-grouse during brood rearing could have more serious consequences, with the magnitude of these effects dependent on the scale of treatment.

- *Mining and Energy Development:* Many of the nation's oil and gas resources lie under sage-grouse habitats across the western U.S., from which development and production activities could potentially affect sage-grouse if habitats are lost, fragmented, or degraded. Effects of oil and gas development on sage-grouse are not extensively documented, however, and long-term impacts after reclamation are not clearly understood.

- *Outreach and Education:* Effective conservation of sage-grouse requires collaboration between federal and state land and wildlife managers, private landowners, extension service, and other interests to develop and implement appropriate regional protection strategies. Most information about shrub-steppe habitats and sage-grouse is contained in technical manuscripts. However, conservation of sage-grouse and other sagebrush-associated species requires local involvement and user friendly information.

- *Power Lines and Generation Facilities:* Power lines provide additional hunting perches for raptors in otherwise treeless areas. Power lines most likely impact grouse near leks, in brood-rearing habitat, and in wintering areas that also support large numbers of wintering raptors. Construction of new power lines contributes to habitat degradation when accompanied by new roads or other infrastructure, e.g., pipelines, fences, etc. Utilities commonly make power poles safe for raptors to use as perches, which poses a dilemma in sage-grouse habitat.

- *Predation:* The effects of predators on sage-grouse populations and issues surrounding predator control concern landowners, wildlife managers, and the public. Composition and abundance of

avian and mammalian predator populations have changed since termination of widespread predator control in the early 1970s. Although many native mammals and birds may prey upon sage-grouse eggs, juveniles, or occasionally adults, grouse populations cycle from lows to highs despite ongoing predation. Predators taking wildlife is an expected component of natural mortality.

- *Recreational Disturbance:* Sage-grouse may draw human recreational activities such as viewing, monitoring, and photographing, to seasonally important habitats. Monitoring sage-grouse populations and habitats is essential at leks and other critical habitats. Recreation and monitoring should be considered cumulatively as part of assessing approaches for managing human disturbance of sage-grouse.

- *Roads and Motorized Vehicles:* Roads and off-road travel can impact sage-grouse and their habitats in a variety of ways that include habitat fragmentation and loss and a potential decline and/or shift in grouse populations. Vehicle use, both on and off roads, has increased significantly over the past few years and has impacted habitat quality. Severity of impacts may be directly related to the amount of vehicle travel occurring.

- *Vegetation:* Past management of rangelands, including plowing, has altered the density, structure, composition, and presence of sagebrush communities and has in some cases created a variety of conditions that do not meet the desired condition described for sage-grouse seasonal needs. Restoring or enhancing sage-grouse habitats requires diverse strategies. Disagreements often arise regarding the ecological role, or successional relationships, of "old" or "decadent" stands of sagebrush, the need to manipulate sagebrush communities, method of control, and extent of treatment.

- *Managing Other Wildlife in Sage-grouse Habitat:* The effect of other species of native herbivores, e.g., large ungulates and prairie dogs, on habitats that they share with sage-grouse may be problematic if intensive use and foraging degrades the quality of habitats that grouse use for nesting and brood-rearing. Streamside riparian areas, springs, wet meadows, and other mesic sites, which also attract other herbivores, become increasingly important as the summer season progresses. Periods of drought often increase adverse impacts. Successfully resolving or mitigating these potential conflicts with wild herbivores depends on willingness of managers to objectively assess impacts that might occur as a result of excessive herbivory and other land uses.

In developing conservation strategies, North Dakota utilized published guidelines for sage-grouse populations and habitats (Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28(4):967-985) and drew extensively from the Montana state plan (Montana Sage-Grouse Work Group. 2004. Management Plan and Conservation Strategies for Sage-grouse in Montana-Final. Montana Fish, Wildlife and Parks, Helena. 131 pp + appendices.). Appreciation is extended to Montana for permission to use much of their plan.